

# Installation Checklist – HP ProLiant Cluster F200 for MSA1500 using Microsoft Windows Server 2003, Enterprise Edition

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## HP ProLiant Cluster F200 for MSA1500

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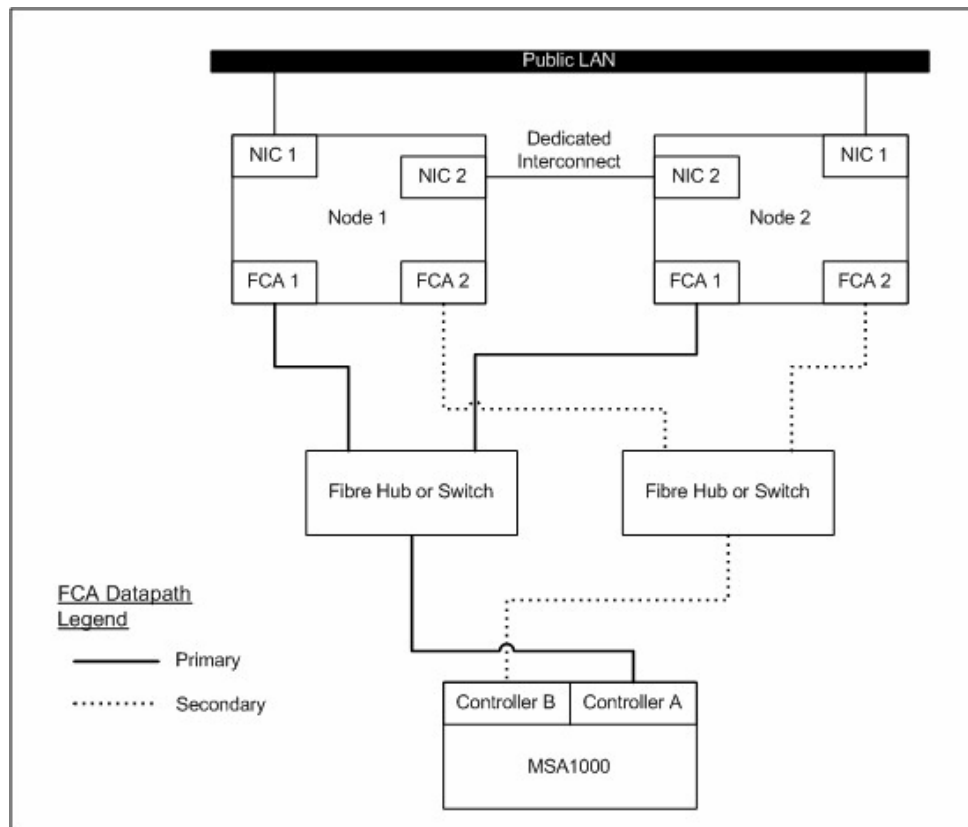
The HP ProLiant Cluster F200 for Modular Smart Array 1500 utilizes HP industry-leading ProLiant server products, StorageWorks Modular Smart Array storage systems, and a Microsoft cluster capable operating system. The ProLiant Cluster F200 for Modular Smart Array 1500 (MSA1500) is an entry level cluster for business-critical environments.

Key features of the ProLiant Cluster F200 for MSA1500 include:

- Support for the scalable Modular Smart Array 1500 (MSA1500), designed to reduce the complexity of SAN deployment
- Scalable SANs designed to maximize cluster performance, uptime and storage capacity
- Multi-path software allows maximum availability with no single point of failure
- Unified suite of HP cluster management tools offer management capabilities to simplify the installation of complex clustered SAN configurations
- Supported in a shared fabric environment

# Hardware Cabling Scheme

**Figure 1.** Hardware cabling scheme



**Note:** This diagram depicts a two-node cluster. With Microsoft Windows Server 2003, Enterprise Edition, HP supports up to eight (8) nodes in a ProLiant Cluster F200 for MSA1500.

## Introduction

Microsoft Windows Server 2003, Enterprise Edition is an extension of the Microsoft Windows 2000 operating system environment developed to enhance the customer experience and to improve the overall usability and deployment.

General cluster improvements for Microsoft Windows Server 2003, Enterprise Edition include:

- **Larger cluster sizes** – Enterprise Edition now supports up to 8 nodes.
- **Enhanced cluster installation wizard** – built-in validation and verification function to help ensure base components are ready to be clustered.
- **Installation** – cluster binaries are automatically copied during the operating system installation.
- **Multi-node addition** – multiple nodes can be added in a single operation instead of one by one.
- **Active Directory integration** – tighter integration including a “virtual” computer object, Kerberos authentication, and a default location for services to publish service control points. Users can access the virtual server just like any other Windows server.

This checklist provides step-by-step ProLiant Cluster F200 for MSA1500 operating system installation and cluster configuration directions using Microsoft Windows Server 2003, Enterprise Edition.

## Software and Hardware Requirements

The following table provides a checklist of the required software versions and, if applicable, any items to execute before beginning the installation. Place a checkmark (✓) in the box after completing each step.

✓	Software and Hardware Requirements
<input type="checkbox"/>	<p>Before installing your HP ProLiant F200 for MSA1500 cluster solution, it is very important to refer to the HP Cluster Configuration Support website for details on components that make up a valid cluster configuration. There is a support matrix for each HP Cluster that details components that represent quality tested and supported HP Cluster configurations.</p> <p>Using the link below, select the appropriate operating system and storage platform and then refer to the row of deliverables that are relevant to the configuration you require.</p> <p>The HP Cluster Configuration Support website can be found at <a href="http://h18022.www1.hp.com/solutions/enterprise/highavailability/answercenter/configuration-all.html">http://h18022.www1.hp.com/solutions/enterprise/highavailability/answercenter/configuration-all.html</a></p>
<input type="checkbox"/>	SmartStart CD.
<input type="checkbox"/>	Two supported ProLiant servers, supported Fibre Channel Adapters (FCA), two or more supported network adapters, two supported Fibre Channel switches or hubs, and one or more MSA1500(s).
<input type="checkbox"/>	Review and understand any Read This First (RTF) and Getting Started cards that were shipped with the product.
<input type="checkbox"/>	Microsoft Windows Server 2003, Enterprise Edition software and documentation.
<input type="checkbox"/>	If applicable, Microsoft Windows Server 2003, Enterprise Edition service pack.
<input type="checkbox"/>	HP StorageWorks MSA1500 Support Software CD.
<input type="checkbox"/>	Array Configuration Utility (ACU), which is located on the HP StorageWorks MSA1500 Support Software CD.
<input type="checkbox"/>	HP Insight Manager (optional).
<input type="checkbox"/>	MSA1500 controller firmware.
<input type="checkbox"/>	EMU firmware.
<input type="checkbox"/>	FCA firmware and boot bios.
<input type="checkbox"/>	Fibre Channel switch firmware.
<input type="checkbox"/>	HP StorageWorks for Windows Secure Path Workgroup Edition (Included in the ProLiant Cluster F200 for Entry Level SAN Cluster Kit).
<input type="checkbox"/>	Sufficient software rights to install the operating system and software applications on each node.
<input type="checkbox"/>	Ensure all hardware is installed and properly cabled as shown in <b>figure 1</b> - hardware cabling scheme on page 3.

## Gathering Information

The following table provides a checklist for the required input parameters that will facilitate the operating system and cluster installation. Write the information in the values column next to each item. Place a checkmark (✓) in the box after completing each step.

✓	Item	Values	
<input type="checkbox"/>	Name for each node: (Microsoft Windows Server 2003, Enterprise Edition supports up to eight (8) nodes in a cluster).	Node 1:	Node 2:
		Node 3:	Node 4:
		Node 5:	Node 6:
		Node 7:	Node 8:
<input type="checkbox"/>	Public network connection IP address and subnet mask for each node:	Node 1	Node 2
		IP address:	IP address:
		Subnet mask:	Subnet mask:
		Node 3	Node 4
		IP address:	IP address:
		Subnet mask:	Subnet mask:
		Node 5	Node 6
		IP address:	IP address:
<input type="checkbox"/>	Private network connection (cluster heartbeat) IP address and subnet mask for each node:	Node 1	Node 2
		IP address:	IP address:
		Subnet mask:	Subnet mask:
		Node 3	Node 4
		IP address:	IP address:
		Subnet mask:	Subnet mask:
		Node 5	Node 6
		IP address:	IP address:
<input type="checkbox"/>	Private network connection (cluster heartbeat) IP address and subnet mask for each node:	Node 7	Node 8
		IP address:	IP address:
		Subnet mask:	Subnet mask:

<input type="checkbox"/> WWID, slot number, and bus of each FCA for each node:	Node 1		Node 2	
	FCA 1 WWID:		FCA 1 WWID:	
	FCA 1 slot and bus:		FCA 1 slot and bus:	
	FCA 2 WWID:		FCA 2 WWID:	
	FCA 2 slot and bus:		FCA 2 slot and bus:	
	Node 3		Node 4	
	FCA 1 WWID:		FCA 1 WWID:	
	FCA 1 slot and bus:		FCA 1 slot and bus:	
	FCA 2 WWID:		FCA 2 WWID:	
	FCA 2 slot and bus:		FCA 2 slot and bus:	
	Node 5		Node 6	
	FCA 1 WWID:		FCA 1 WWID:	
FCA 1 slot and bus:		FCA 1 slot and bus:		
FCA 2 WWID:		FCA 2 WWID:		
FCA 2 slot and bus:		FCA 2 slot and bus:		
Node 7		Node 8		
FCA 1 WWID:		FCA 1 WWID:		
FCA 1 slot and bus:		FCA 1 slot and bus:		
FCA 2 WWID:		FCA 2 WWID:		
FCA 2 slot and bus:		FCA 2 slot and bus:		
<input type="checkbox"/> Cluster name:				
<input type="checkbox"/> Cluster IP address and subnet mask:				
		IP address:		
		Subnet mask:		
<input type="checkbox"/> Default gateway address:				
		IP address:		
<input type="checkbox"/> WINS server address:				
		IP address:		
<input type="checkbox"/> DNS address:				
		IP address:		
<input type="checkbox"/> Local machine Administrator password (used during OS installation):				
		Know the Administrator password		
<input type="checkbox"/> Domain name:				
<input type="checkbox"/> Domain administrator user name and password (used during OS installation to have the machine join the domain):				
		Know the user name and password		
<input type="checkbox"/> Domain account name and password for cluster service (this account has special privileges on each cluster node):				
		Know the user name and password		

# Installing Node 1 Operating System

The following table provides a checklist of the operating system installation steps for Node 1. Place a checkmark (✓) in the box after completing each step.

✓	Installing Node 1 Operating System
<input type="checkbox"/>	Power on the shared storage. After powering on, wait until the storage system startup complete message appears on the display. It may take up to two minutes for the storage system to completely power up.
<input type="checkbox"/>	Power on and boot Node 1 with the SmartStart CD in the CD-ROM drive.
<input type="checkbox"/>	<p>Configure the cluster node using the SmartStart CD. Select Microsoft Windows Server 2003, Enterprise Edition as the operating system and follow the SmartStart on-screen instructions.</p> <p>After the OS installation is complete, SmartStart will automatically install the latest HP support software.</p>
<input type="checkbox"/>	<p>Each cluster node requires at least two network adapters; one to connect to a public network and one to connect to a private network.</p> <p><i>For the public network connection:</i> If the network adapter can transmit at multiple speeds, then manually specify a speed and duplex mode. The speed for the network adapter should be hard set (manually set) to be the same on all nodes according to the card manufacturer's specification.</p> <hr/> <p><b>Best Practice:</b> To provide a maximum level of redundancy, use NIC Teaming capabilities for selected HP network products to provide a redundant public network connection. Please note, however, that NIC Teaming is unsupported for the private network connection.</p> <hr/>
<input type="checkbox"/>	Configure the TCP/IP settings for the public network connection.
<input type="checkbox"/>	<p><i>For the private network connection:</i> To eliminate possible private network cluster communication issues refer to Microsoft Knowledge Base (KB) article <b>EN-US258750</b> to properly setup the private network.</p> <p><a href="http://support.microsoft.com/default.aspx?scid=kb;EN-US;258750">http://support.microsoft.com/default.aspx?scid=kb;EN-US;258750</a></p>
<input type="checkbox"/>	Configure the TCP/IP settings for the private network connection.
<input type="checkbox"/>	Join the Windows domain and reboot when prompted.
<input type="checkbox"/>	After the reboot, log the node into the domain.
<input type="checkbox"/>	Insert the HP StorageWorks MSA1500 Support Software CD. Click <b>Install Array Configuration Utility (ACU)</b> to install the version of ACU that supports the MSA1500.
<input type="checkbox"/>	Select the appropriate option to install the FCA drivers for Windows Server 2003, Enterprise Edition.
<input type="checkbox"/>	Reboot Node 1 when prompted and then log into the domain.
<input type="checkbox"/>	<p>Install the HP StorageWorks Secure Path for Windows Workgroup Edition software.</p> <p>Insert the HP StorageWorks Secure Path for Windows Workgroup Edition CD to automatically start the Secure Path installation process. Alternatively, double-click the following file on the CD: &lt;CD-ROM drive&gt;:\SPInstall\setup.exe. During the installation, you will be prompted to configure your clients. Refer to the Secure Path documentation for further details.</p> <p>Remove the HP StorageWorks Secure Path for Windows Workgroup Edition CD from the CD-ROM drive.</p> <p>Reboot the node when prompted.</p>
<input type="checkbox"/>	<p>Install Secure Path Manager (SPM) on a monitor node. To use Secure Path, install SPM on a machine designated as a monitor node and connected to the same domain as the cluster.</p> <hr/> <p><b>Note:</b> If desired, a Cluster node may also be the Monitor node.</p> <hr/>
<input type="checkbox"/>	Shutdown Node 1 when the installation is complete.

## Installing Node 2+ Operating System

The following table provides a checklist of the operating system installation steps for Node 2+. Place a checkmark (✓) in the box after completing each step.

**Note:** Microsoft Windows Server 2003, Enterprise Edition supports a maximum of 8 cluster nodes. Repeat the following operating system installation steps for each additional node.

✓	Installing Node 2+ Operating System
<input type="checkbox"/>	Power on and boot the next node with the SmartStart CD in the CD-ROM drive.
<input type="checkbox"/>	Configure the cluster node using the SmartStart CD. Select Microsoft Windows Server 2003, Enterprise Edition as the operating system and follow the SmartStart on-screen instructions. After the OS installation is complete, SmartStart will automatically install the latest HP support software.
<input type="checkbox"/>	Each cluster node requires at least two network adapters; one to connect to a public network and one to connect to a private network. <i>For the public network connection:</i> If the network adapter can transmit at multiple speeds, then manually specify a speed and duplex mode. The speed for the network adapter should be hard set (manually set) to be the same on all nodes according to the card manufacturer's specification. <b>Best Practice:</b> To provide a maximum level of redundancy, use NIC Teaming capabilities for selected HP network products to provide a redundant public network connection. Please note, however, that NIC Teaming is unsupported for the private network connection.
<input type="checkbox"/>	Configure the TCP/IP settings for the public network connection.
<input type="checkbox"/>	<i>For the private network connection:</i> To eliminate possible private network cluster communication issues refer to Microsoft Knowledge Base (KB) article <b>EN-US258750</b> to properly setup the private network. <a href="http://support.microsoft.com/default.aspx?scid=kb;EN-US;258750">http://support.microsoft.com/default.aspx?scid=kb;EN-US;258750</a>
<input type="checkbox"/>	Configure the TCP/IP settings for the private network connection.
<input type="checkbox"/>	Join the Windows domain and reboot when prompted.
<input type="checkbox"/>	After the reboot, log the node into the domain.
<input type="checkbox"/>	Insert the HP StorageWorks MSA1500 Support Software CD. Click <b>Install Array Configuration Utility (ACU)</b> to install the version of ACU that supports the MSA1500.
<input type="checkbox"/>	Select the appropriate option to install the FCA drivers for Windows Server 2003, Enterprise Edition.
<input type="checkbox"/>	Reboot Node 2 when prompted and then log into the domain.
<input type="checkbox"/>	Install the HP StorageWorks Secure Path for Windows Workgroup Edition software. Insert the HP StorageWorks Secure Path for Windows Workgroup Edition CD to automatically start the Secure Path installation process. Alternatively, double-click the following file on the CD: <CD-ROM drive>:\SPInstall\setup.exe. During the installation, you will be prompted to configure your clients. Refer to the Secure Path documentation for further details. Remove the HP StorageWorks Secure Path for Windows Workgroup Edition CD from the CD-ROM drive. Reboot the node when prompted.
<input type="checkbox"/>	Shutdown the node when the installation is complete.
<input type="checkbox"/>	Microsoft Windows Server 2003, Enterprise Edition supports up to 8 nodes in a cluster. Repeat the <b>Installing Node 2+ Operating System</b> instructions on any additional nodes that will join the cluster.



## Configuring the Shared Storage

The following table provides a checklist of the steps necessary to configure the MSA1500 storage. Place a checkmark (✓) in the box after completing each step.

✓	Configuring the Shared Storage
<input type="checkbox"/>	Power on Node 1 and log into the domain.
<input type="checkbox"/>	From the desktop of Node 1, select <b>Start → Programs → Compaq/HP System Tools → hp Array Configuration Utility → hp Array Configuration Utility</b> . <b>Note:</b> The Internet Connection Wizard pop-up screen may appear. Internet Explorer must be configured appropriately in order to use the HP Array Configuration Utility. Also, be sure to read the security alert pop-up screen. The Internet Explorer security level may need to be modified in order to use ACU.
<input type="checkbox"/>	Select the MSA1500 controller to configure the shared storage hard drives. Refer to the user guide for the MSA1500 storage system for additional details. If sharing an MSA1500 between multiple clusters, Selective Storage Presentation (SSP) is required for configuration. Refer to the ACU documentation for information on using SSP.
<input type="checkbox"/>	Configure the shared storage drives. <b>IMPORTANT:</b> Create a logical drive using ACU on one of the MSA1500 arrays with at least 510MB of space. Microsoft recommends at least 500MB for the cluster Quorum drive. The extra space for the logical drive size specified in ACU is to account for internal disk size calculations used by ACU. Specifying 510MB will ensure that this size of this disk will be at least 500MB of formatted drive space for use as the Quorum drive. Refer to Microsoft Knowledge Base Article – 280345 or the help documentation on the cluster node for more information on cluster disk sizes. <a href="http://support.microsoft.com/default.aspx?scid=kb;EN-US;280345">http://support.microsoft.com/default.aspx?scid=kb;EN-US;280345</a>
<input type="checkbox"/>	After the shared storage drives are configured, select <b>Start → Programs → Administrative Tools → Computer Management</b> . Then select <b>Disk Management</b> to create volumes out of the logical drives. <b>Important:</b> DO NOT upgrade the logical drives from Basic to Dynamic. Microsoft Cluster Services does not support dynamic disks.
<input type="checkbox"/>	Be sure to assign drive letters and format the volumes as NTFS.
<input type="checkbox"/>	Close <b>Disk Management</b> for Microsoft Windows Server 2003, Enterprise Edition.

## Creating the Cluster

The following table provides a checklist for creating the cluster from Node 1. Place a checkmark (✓) in the box after completing each step.

✓	Creating the Cluster
<input type="checkbox"/>	From Node1, select <b>Start → Programs → Administrative Tools → Cluster Administrator</b> .
<input type="checkbox"/>	Select <b>Create New Cluster</b> from the <b>Action</b> drop-down box. Click <b>OK</b> .
<input type="checkbox"/>	Click <b>Next</b> on the welcome screen.
<input type="checkbox"/>	Select the domain to create the cluster in and enter a name for the cluster. Click <b>Next</b> .
<input type="checkbox"/>	Enter the name of the first server to be in the cluster. Click <b>Next</b> .
<input type="checkbox"/>	When the cluster wizard finishes analyzing the configuration, click <b>Next</b> .
<input type="checkbox"/>	Enter the IP address for the cluster. Click <b>Next</b> .
<input type="checkbox"/>	Enter the username and password for the cluster. Click <b>Next</b> .
<input type="checkbox"/>	Verify the proposed cluster configuration. Click <b>Next</b> .
<input type="checkbox"/>	When the wizard has finished creating the cluster, click <b>Next</b> , and then click <b>Finish</b> .
<input type="checkbox"/>	Select <b>Start → Control Panel → HP Management Agents</b> . In the list of <b>Inactive Agents</b> , select <b>Clustering Information</b> and click <b>Add</b> to move this agent to the list of active agents and click <b>OK</b> .
<input type="checkbox"/>	Restart the agents when prompted.

## Joining Node 2+ to the Cluster

The following table provides a checklist for the process of joining Node 2+ to the cluster. Place a checkmark (✓) in the box after completing each step.

**Note:** Microsoft Windows Server 2003, Enterprise Edition supports a maximum of 8 cluster nodes. Repeat the following steps for each additional node.

✓	Joining Node 2+ to the Cluster
<input type="checkbox"/>	Power on Node 2+ and log into the domain.
<input type="checkbox"/>	From Node 2+, select <b>Start → Programs → Administrative Tools → Cluster Administrator</b> .
<input type="checkbox"/>	Select <b>Add nodes to cluster</b> from the <b>Action</b> drop-down box. Enter the name of the cluster to join and click <b>OK</b> .
<input type="checkbox"/>	Click <b>Next</b> on the welcome screen.
<input type="checkbox"/>	Enter the name of the server that you want to join the cluster, click <b>Add</b> and then click <b>Next</b> .
<input type="checkbox"/>	When the cluster wizard finishes analyzing the configuration, click <b>Next</b> .
<input type="checkbox"/>	Enter the password for the cluster. Click <b>Next</b> .
<input type="checkbox"/>	Verify the proposed cluster configuration. Click <b>Next</b> .
<input type="checkbox"/>	When the wizard has finished adding the node to the cluster, click <b>Next</b> , and then click <b>Finish</b> .
<input type="checkbox"/>	Select <b>Start → Control Panel → HP Management Agents</b> . In the list of <b>Inactive Agents</b> , select <b>Clustering Information</b> and click <b>Add</b> to move this agent to the list of active agents, and then click <b>OK</b> .
<input type="checkbox"/>	Restart the agents when prompted.
<input type="checkbox"/>	Microsoft Windows Server 2003, Enterprise Edition supports up to 8 nodes in a cluster. Repeat the <b>Joining Node 2+ to the Cluster</b> installation instructions for each additional node.

## Validating the Cluster Configuration

To validate the cluster installation, perform the following steps from any cluster node. Place a checkmark (✓) in the box after completing each step.

✓	Validating the Cluster Configuration
<input type="checkbox"/>	From the desktop of any node, select <b>Start → Programs → Administrative Tools → Cluster Administrator</b> , and connect to the cluster.
<input type="checkbox"/>	Right click on one of the cluster groups and select <b>Move Group</b> .
<input type="checkbox"/>	Verify the group fails over and all resources come online.
<input type="checkbox"/>	Right click on the same cluster group and select <b>Move Group</b> .
<input type="checkbox"/>	Verify that the group fails over and all resources come online.
<input type="checkbox"/>	Repeat the <b>validating the cluster configuration</b> steps, if desired, for each group.

The installation is now complete.

## For more Information

To learn more about HP High Availability and ProLiant Clusters visit the following Web site:  
<http://www.hp.com/servers/proliant/highavailability>.

## Feedback

Help us improve our technical communication. Let us know what you think about the technical information in this document. Your feedback is valuable and helps us structure future communications. Please send your comments to [hawebserver@hp.com](mailto:hawebserver@hp.com).

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